

*Step 2: Prepare a narrative description of how you currently use technology in the classroom in innovative ways.*

I teach Agricultural Science and Technology in a small rural high school. Even though our enrollment does have a limiting effect on the monetary resources that our district is allocated, I have found that by using creative techniques, I can still motivate students and create in them a desire to learn. Students vary a great deal in learning styles as to how they master concepts and absorb the principles taught. In the subject area that I teach, I find that many students fall into the category of visual learners. Those identified as visual learners, find that by watching a process demonstrated and then by actually using the same hands-on technique, they are quick to learn new ideas and remember and retain that information. Examples of this behavior include the use of micrometers to measure exact tolerances in machining parts on the lathe and the vertical mill as well as measuring precise specifications when evaluating parts inside an engine. Most students are interested when you tell them that you can measure the diameter of a human hair. When you explain to them that the same dimension of .002 is the norm for the working clearances inside an engine, the learning curve really climbs. I try to use the hands on reading of the micrometers to teach math skills such as fractions and decimal equivalents used to trouble shoot and evaluate engine failures. Students quickly master the steps necessary to read the micrometer and without realizing it, learn valuable entry level math skills at the same time.

During the past five years, I have worked to develop a high school machining program at our school. I acquired four engine lathes and two vertical mills, one having a digital read-out. I obtained these large machines through Tech. Prep Grants and surplus sales. Students love to operate these pieces of shop equipment to create projects that are drawn on blueprints. I understand that there are only a few machining programs left in high schools in Idaho, but I know that our metal working units really motivate my students. Another idea that I have found to be effective in creating and holding student interest is the design and fabrication of ornamental iron projects. Students love to build things. The past two years I have been working to add new equipment and increase the resources that we have to take this process to a new level. We now have a wheel roller for bending circles and an ornamental bender for creating all sorts of new twists and turns for our projects. I have also upgraded our plasma cutting system to enable us to cut and design projects with great precision. This vital process orients students to this current technology which has become the industry standard.

I am always looking for new ways to integrate technology into my program. Many ideas that I use I have learned from fellow instructors and input from industry. Trying to stay on the cutting edge is sometimes difficult, but it is exciting for my students and it keeps me motivated and learning new things as well.



***Step 3: Prepare a narrative description of how your use of technology in the classroom has impacted student performance.***

In today's world of video games and interactive imaging, it seems very challenging to motivate and educate students. As a teacher, my philosophy is, that each student needs involvement in the learning process and not just entertainment with games. Finding what drives individual students becomes a constant goal. In my area of instruction, that of Agricultural Science and Technology, most of my students attend my classes by choice, not because of a requirement. Retaining those students becomes the key. I have found, that everyone has a passion for something, the trick is to discover in each student what that something is. As I prepare the curriculum for my courses, I try to integrate the use of technology as frequently as possible. With the ready access to the Internet, students can research and discover information that can truly open up a world of knowledge. I use the computer and Internet resources as a learning tool and not for entertainment. Examples of units where the student performance has definitely shown great improvement are the preparation of Agricultural speeches for the FFA Prepared Public Speaking competition and research on plant and animal diseases. Working with our English and Math teachers, I have assisted them in preparing students to take the various ISAT and ACT tests required on a regular basis.

If their passion to learn revolves around engines, machining or welding, I can teach those competencies as well as some math, science and communication skills with a much higher retention rate. Students love to try new things, and as they do, many find their niche or area of interest that ultimately can assist them in the selection of a future career. Obviously all areas of technology can't be provided at a small rural high school, but I have found that outside resource people are more than willing to come to my classroom to educate and interact with my students. It is interesting to note that these specialists have an impact on my students and provide added information on advanced training and industry needs that may translate into a future job with great pay and benefits. Sometimes I take the class to the technology itself. Field trips provide an excellent way for students to experience technology first hand. Some tours that I select for my classes include Trails West Manufacturing ( horse trailer fabrication), Valley Implement ( Machinery Dealership), Fetzer's Inc.( Architectural Woodworking), Wheeler Machinery (Caterpillar Dealer), Icon Health and Fitness ( Exercise Equip. Manufacturing), and Malt O Meal ( Cereal Grain Manufacturing). Each of these tours has a different effect on students, but I have witnessed great success in many instances where individual students noticed something during the tour that inspired them to make a career choice and work hard to achieve that goal. When the " light finally goes on" for that student, education becomes exciting for them and the technology they enjoy is something they can see themselves becoming a part of.

***Step 4: Prepare a narrative description of how what you are proposing to purchase will enable you to use technology in an innovative manner to enhance learning opportunities for your students.***

As I have mentioned in a previous narrative, I have expanded some of the metal work course offerings for my Ag. Technology Students. By adding a wheel roller and a metal bender capable of doing twisted iron and scroll bends, students plan and create some very impressive ornamental iron projects. In addition, the upgraded plasma cutting hand torch has been useful to add template cut patterns to some of our designs. These types of metal projects excite students. Everyone has an idea that they would like to see displayed on their mailbox or on a sign in front of their house. My current plan is to fabricate a C.N.C. plasma cutting table. I have seen these used in industry settings as well as two other agriculture programs and the results amazed me. The C.N.C. ( computer numeric control) system couples the computer's technology with the plasma torch to create various signs and picture images cut from plate steel and aluminum. It works much like a computer and printer relationship, except instead of printing a graphic, it plots the graphic so it can direct the cut to the plasma machine torch. I plan to use the current plasma machine that I have in the shop and a computer that the school has made available. If I could obtain this grant, it would help with the necessary funds to purchase the final components to complete the system .First, I need to fabricate the main frame and water table to support the cutting rack. I will then purchase the gantry system which is the moving cutting arm and support mechanism to carry the plasma torch. Finally, the remaining dollars requested would allow the purchase of the computer software package necessary to make the system operational. The addition of this piece of equipment will enhance student projects and teach them the cutting edge technological skills that will give them an advantage in the work place.



***Step 5: Prepare a narrative description of how what you are proposing to purchase will be used in innovative ways in the classroom.***

I plan to integrate the use of the C.N.C. plasma cutting table into the curriculum for my advanced welding and fabrication class. This class is an Idaho P.T.E. capstone course which incorporates skills learned in previous ag .mechanics curriculum offerings. Students will design and create metal projects using a variety of skills and available equipment. The introduction of C.N.C. technology will require students to master the use of CAD design software to create on the computer screen what they want to cut from steel. Even though this new process will require extra time and effort, the excitement of watching this machine operate and complete the programmed task through the computer interface will definitely motivate students. Even though only one student can operate the cutting table at a time, the computer part of the design process can be done on a separate P.C. and the information saved on a USB jump drive and transferred to the plasma table unit. The use of this type of technology in a high school lab is unique and one that will stimulate interest and retain quality students.

**Qwest Foundation for Education Grant Expenditure Plan**  
**(Standard IFARMS Budget Format)**

Activity	100	200	300	400	500	TOTAL
	Salaries	Benefits	Contractual Agreements	Materials and Supplies	Capital Objects	
C.N.C. (Computer Numeric Control) Plasma Cutting Table						
1. Gantry System & Computer Software					\$ 4,900.00	\$ 4,900.00
2. Plasma Machine Torch					700.00	700.00
3. Steel Tubing & 6 Large Casters				\$ 600.00		600.00
<b>TOTAL</b>				\$ 600.00	\$ 5,600.00	\$ 6,200.00